Message

From: Reddy - CDPHE, Patrick [patrick.reddy@state.co.us]
Sent: 4/1/2014 3:47:43 PM
To: Brad Pierce - NOAA Federal [brad.pierce@noaa.gov]
CC: Payton, Richard [Payton.Richard@epa.gov]; Kathy Strabala [kathys@ssec.wisc.edu]; Rebecca Cintineo [rebecca.cintineo@ssec.wisc.edu]; James E. Davies [jim.davies@ssec.wisc.edu]; Liam Gumley [liam.gumley@ssec.wisc.edu]; Allen Huang [allen.huang@ssec.wisc.edu]; Tonnesen, Gail [Tonnesen.Gail@epa.gov]; Matichuk, Rebecca [Matichuk.Rebecca@epa.gov]
Subject: Re: FW: Front Range stratospheric intrusion Sunday night, and IDEA-I trajectory heights

That sounds great to me.

On Tue, Apr 1, 2014 at 9:44 AM, Brad Pierce - NOAA Federal <brad.pierce@noaa.gov> wrote:

> One of the things that I've been considering is changing the color scale so that it goes to red when the trajectories are within some delta-pressure from the surface, say 250mb. This would account for variable surface heights.
>
> What are your thoughts on that?
>
> Brad

On Tue, Apr 1, 2014 at 10:28 AM, Reddy - CDPHE, Patrick <patrick.reddy@state.co.us> wrote:

> Thanks Richard,
>
> For forecasting intrusions in Colorado, I look at forecast RH and IPV at 600 mb. The models often miss the impacts of lee waves and wave breaking in the lee of high terrain on folds. A paper back in the 80's talked about the role of the Front Range on pulling folds closer to the ground to the east of the Divide. This is something that happens fairly often with these systems. I would vote for a color scheme that allows us to see trajectories dropping to 600 mb and lower.
>
> Regards,
>
> Pat

On Tue, Apr 1, 2014 at 8:03 AM, Payton, Richard <Payton.Richard@epa.gov> wrote:

> I am only able to comment on the web version of IDEA-I for stratospheric intrusion.
>
> Pat Reddy of CDPHE suggested the potential for an intrusion based on the meteorology in Colorado on Sunday, March 30. We saw highest ozone at Rocky Mountain National Park with 8-hour ozone of 62 ppb Sunday afternoon. While we didn't have any good trajectories to work with from the web version of IDEA-I, I got to thinking about the color scheme, which has trajectories going from white to red at about 760 mb. The Rocky Mountain National Park monitor is at 9,007 feet, or, depending on your standard atmosphere definition, about 720 mb. The other monitor we have seen most frequently impacted by stratospheric intrusions, South Pass, in Fremont County, Wyoming, is at 8,291 feet, or just about 750 or 760 mb. For conditions like we had Sunday afternoon in Denver, with westerly downslope winds, we might get more transport down the east face of the Colorado front range mountains into Denver than the trajectory model predicts. Bottom line, the white trajectories can impact our high elevation

monitors, and with westerlies with frontal passages, downslope winds may transport those white trajectories to our lower elevation (relatively, say, 800 mb) Denver level monitors. More height resolution (more colors) on trajectory height between 700 and 800 mb would be a nice refinement to catch impacts at our high elevation monitors, although I don't expect trajectory models to handle our terrain well.

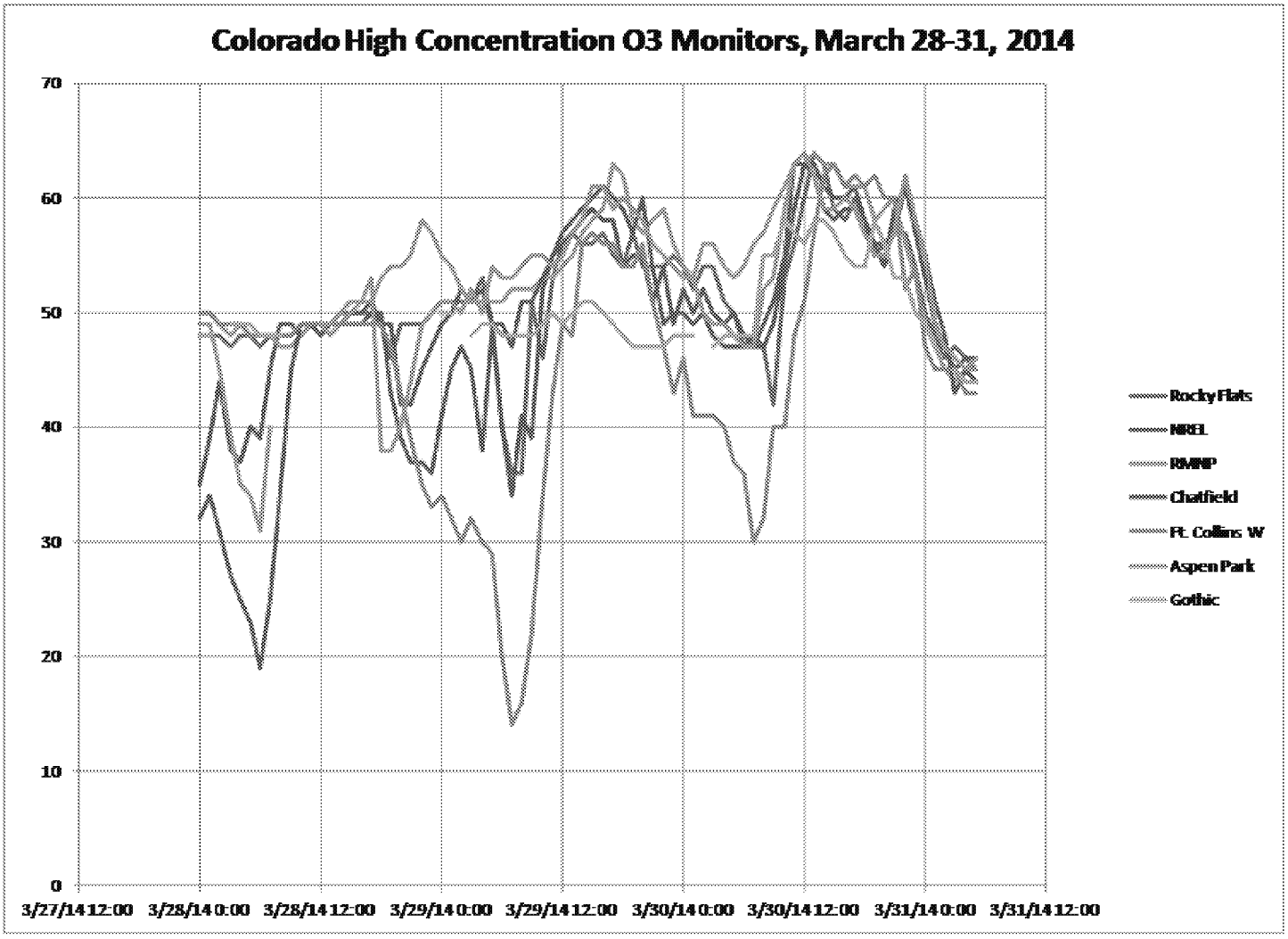
Richard Payton

EPA Region 8 Air Quality Monitoring

(303) 312-6439

From: Payton, Richard
Sent: Monday, March 31, 2014 8:04 AM
To: 'Reddy - CDPHE, Patrick'; Andrew Langford-NOAA Federal; Tonnesen, Gail; Brad Pierce; pfister@ucar.edu; Chuck.Machovec@state.co.us; Briggs, Kevin; emmett.malone@state.co.us; Scott Landes - CDPHE; Pierce', 'GORDON; gregory.harshfield@state.co.us
Cc: Matichuk, Rebecca; Jackson, Scott; Rothery, Deirdre
Subject: RE: Front Range stratospheric intrusion Sunday night

Rocky Mountain NP had an 8-hour average of 62 ppb yesterday; Fort Collins West, 61 ppb, Aspen Park and NREL in Jefferson County and Chatfield in Douglas County had 60 ppb. Gothic had 56 ppb. I did not see any trajectories form relatively high upwind 516 mb points come down below 750 mb on the IDEA-I analysis. NREL, RMNP, Chatfield and Aspen Park all had a secondary peak, 1-hour at 60-62 ppb, at 9:00-11:00 PM.



From: Reddy - CDPHE, Patrick [mailto:patrick.reddy@state.co.us]
Sent: Sunday, March 30, 2014 9:58 AM
To: Andrew Langford-NOAA Federal; Tonnesen, Gail; Brad Pierce; pfister@ucar.edu; Chuck.Machovec@state.co.us; Briggs, Kevin; emmett.malone@state.co.us; Scott Landes - CDPHE; Pierce', 'GORDON; gregory.harshfield@state.co.us; Payton, Richard
Subject: Front Range stratospheric intrusion Sunday night

I don't have access to my normal tools for forecasting these events this morning. The UCAR IDV tool data stream is offline for some reason. Also the IDEA intrusion tool is hampered by extensive cloud cover over the West, so it really can't pick up 500 mb O3 over most of this region. We will have a classic open trough move across Colorado today with a strong vort max passing by the Front Range around midnight tonight. This should cause at least moderate concentrations at RMNP, Gothic, many foothills sites, some plains locations and also area within the southern half of Wyoming. Blowing dust and strong winds are also likely this afternoon in many areas of Colorado, Arizona, Utah, and New Mexico.

Pat

--

Patrick J. Reddy

Senior Air Quality Meteorologist

Modeling, Meteorology, and Emissions Inventory Unit

Technical Services Program

Air Pollution Control Division

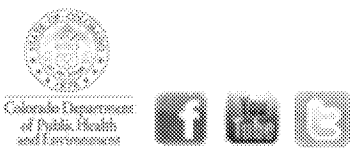
Colorado Department of Public Health and Environment

APCD-TS-B1

4300 Cherry Creek Drive South

Denver, CO 80246-1530

303-692-3239| patrick.reddy@state.co.us



--

Patrick J. Reddy

Senior Air Quality Meteorologist

Modeling, Meteorology, and Emissions Inventory Unit

Technical Services Program

Air Pollution Control Division

Colorado Department of Public Health and Environment

APCD-TS-B1

4300 Cherry Creek Drive South

Denver, CO 80246-1530

303-692-3239| patrick.reddy@state.co.us

--

R. Bradley Pierce

NOAA/NESDIS
Center for SaTellite Applications and Pesearch (STAR)
Advanced Satellite Products Branch (ASPB)
1225 West Dayton Street
Madison, WI 53706

--

Patrick J. Reddy

Senior Air Quality Meteorologist

Modeling, Meteorology, and Emissions Inventory Unit

Technical Services Program

Air Pollution Control Division

Colorado Department of Public Health and Environment

APCD-TS-B1

4300 Cherry Creek Drive South

Denver, CO 80246-1530

303-692-3239| patrick.reddy@state.co.us